

round with the fly (still struggling), held in his left chela. After three minutes the movements of the fly ceased. Then the Scorpion brought the fly up to its chelicerae, and released its hold with the left chela. The fly was now carried by the two chelicerae, the chelæ being left free. I did not observe in these small Scorpions any thing of the method of getting out the juices of their prey.

I am inclined to think that the species of *Euscorpium* do not so readily prey upon their own kind as does *Androctonus funestus*, and as does the Spanish Scorpion allied to *A. funestus*, namely the *A. occitanus*, or yellow Scorpion of Southern France and Spain\*. According to Maupertuis, in six weeks one hundred of these *A. occitanus*, kept by him in a cage, were reduced in number to ten, one having eaten another, until at last only these few, presumably the embodiment of the whole hundred, were left.

I trust that these few fragmentary observations may induce others, who have enjoyed greater opportunities, to place on record their experiences as to the habits of various species of these notable and historic Arachnids.

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On the Butterflies collected by Lord Walsingham in California.

By ARTHUR G. BUTLER, F.L.S., F.Z.S., Assistant-Keeper,  
Zoological Department, British Museum.

(Read March 2, 1882.)

THE collection of which the following is an account consists of about eighty species obtained by Lord Walsingham during the years 1871 and 1872 in California, one species only (which I believe to be the *Thecla auretteorum* of Boisduval) being taken in Oregon. Compared with other collections from this country, the present is by no means poor in species: the first series forwarded by M. Lorquin to Dr. Boisduval contained 83 species of Butterflies; but some of these may have been received from Mr. Doubleday, since Dr. Boisduval says:—"Toutes les espèces mentionnées dans cet opuscule ont été recueillies par M. Lorquin, à l'exception de cinq à six, qui nous ont été données par M.

\* Since writing the above, I have found three small *Euscorpium*, killed and their juices sucked, in a box sent to me containing eight live specimens when despatched from Italy.

Doubleday." Of the subsequent collections forwarded by M. Lorquin, it would be impossible to guess the exact number of species; but the list of them, published by Dr. Boisduval in 1868, enumerated 62 species, probably representing those received since 1852. Although the rapid growth of entomological science in America rendered it improbable that the present collection would contain novelties, it is none the less valuable scientifically, since it has rendered necessary the reexamination of many species which in past years had been too hastily identified.

One of the principal difficulties which the Lepidopterist has to deal with in the determination of his specimens arises from the fact that the students of this branch of entomology are not agreed as to what constitutes a species or variety. Thus the genus *Hypolimnas* may be allowed to vary in every possible way, and to have a range extending from Nepal to South Australia; but the genera *Pedaliodes* and *Ithomia* cannot be permitted to vary at all, even in the same locality—nay, in characters which the dividers of species would never dream of regarding as more than chance sports.

It may be urged, and to a certain extent it is true, that some genera are more liable to vary than others, owing to the fact that intermediate gradations between the species have not yet been wholly eliminated; but this is, I believe, the exception, and not the rule; and it is often the case that where nearly allied species are asserted to be conspecific, breeding from the egg proves them to belong to different sections of their genus: as an instance, I may refer to *Vanessa comma* and *V. satyrus*, pronounced by Dr. Staudinger to be both races or varieties of *V. e-album*, but proved by breeding to belong to distinct subgroups of the genus.

The following is a list of Lord Walsingham's captures, some few of which, having passed into the collection of Mr. Godman, that gentleman, with his usual courtesy, has kindly put it in my power to examine with the remainder of the collection: these I have added in their natural position in the paper.

## NYMPHALIDÆ.

### DANAINÆ.

1. DANAIIS PLEXIPPUS.—*Papilio plexippus*, *Linncæus*, *Mus. Lud. Ulr.* p. 262 (1764).—*Papilio archippus*, *Fabricius*, *Ent. Syst.* iii. 1, p. 49 (1793); *Smith, Abbot, Lepid. Insects Georgia*, i. pl. 6

(1797). Mendocino, Tehama, and Siskiyou Counties; May to September.

It has now been decided (see Biol. Centr.-Amer., Lepid. Rhopal. p. 2) that the *Papilio plexippus* of Linnæus must be the species which has been long known under the name of *Danaïs archippus* of Fabricius and not the Indian species. Although the authors of the Lepidopterous portion of the 'Biologia' have in this instance departed from their usual plan of adopting the name respecting which there could be no question in preference to that of which there might still be the shadow of a doubt, I quite think they are justified in so doing, by the strong circumstantial evidence in favour of the adoption of the name *D. plexippus* for the New-World insect.

#### SATYRINÆ.

2. CÆNONYMPHA CALIFORNICA, *Westwood & Hewitson, Gen. Diurn. Lep.* pl. 67. fig. 2 (1851). Sonoma County, May 18th to 23rd; Mendocino County, May 24th to June 14th; Lake County, June 15th to 23rd.

3. SATYRUS ARIANE, *Boisduval, Ann. Soc. Ent. France, sér. 2.* x. p. 307. n. 58 (1852). Shasta County, July 10th to 28th; Siskiyou County, July 29th to September 15th.

Nearly the whole of the Butterflies collected by Lord Walsingham were provisionally named for him by Mr. Elwes: the present species I find labelled as the *S. boopis* of Behr; but of that species its author says that it is "only distinguishable from *Nephele* by the absence of eyes on the underside of the hind wings." An examination of the five examples before me gives the following results:—1 ♂ with 6 distinct ocelli on under surface of secondaries; 1 with 6 less distinct ocelli, the first and third without pupils; 1 with 6 still less distinct ocelli, the first to fourth without pupils; 1 with 6 distinct ocelli, but the four first and the sixth extremely small; and, lastly, 1 ♀ with six punctiform ocelli, the pupils having only a black edge. All these specimens agree perfectly with Boisduval's *S. ariane*, described as having "une rangée irrégulière de six petits yeux noirs, à pupille blanche et à iris fauve, groupés trois par trois, et plus ou moins bien marqués"\*. . .

\* Of the female Boisduval says, "les petits yeux du dessous des ailes inférieures beaucoup moins visible que dans les mâles."

There is a specimen in Mr. Godman's collection agreeing with the male first mentioned above in having six distinct ocelli on the under surface of the hind wings.

4. *SATYRUS SILVESTRIS*, *W. H. Edwards, Proc. Acad. Nat. Sci. Phil.* 1861, p. 162. Colusa and Siskiyou Counties in July.

Three male examples of this species I found labelled with a MS. name proposed some years since by Mr. W. H. Edwards, but subsequently abandoned; he writes that "It refers to a small race and slightly pale form of *S. silvestris*, Edw. The drawing you send me is the form I allude to, but it is hardly different enough from the type of *silvestris* to warrant a name."

5. *CENEIS IDUNA*.—*Chionobas iduna*, *W. H. Edwards, Butt. N. Am.* ii. *Chion.* pl. 1. figs. 1-4 (1874). One male taken in Mendocino County, California, and a female in Mr. Godman's collection.

#### N Y M P H A L I N Æ.

6. *ARGYNNIS MONTICOLA*, *Behr, Proc. Cal. Acad.* 1862, p. 172; *Edwards, Butt. N. Amer.* i. *Arg.* pl. 8 (1868). Mendocino County, May and June.

This agrees with examples identified by Dr. Boisduval as *A. zerene*.

7. *ARGYNNIS EGLEIS*, *Boisduval, Léop. Cal.* p. 59 (1869). A specimen from Mendocino County.

I have named this insect by comparison with two wings of Boisduval's species forwarded by the author in April 1872. I can detect no difference between this species and *A. Behrensii* as figured by Mr. W. H. Edwards, with which it will probably prove to be synonymous.

Mr. Godman also forwarded the following species, presented to him by Lord Walsingham.

7 a. *ARGYNNIS ATLANTIS*, *Edwards, Butt. N. Am.* i. pl. 5. figs. 1-3. California.

7 b. *ARGYNNIS EURYNOME?*, *Edwards, Butt. N. Am.* ii. pl. 1. figs. 1-4 (1875). California.

The example received from Mr. Godman only differs from the figures by Mr. Edwards in the greater width of the submarginal spots: it is also slightly larger.

8. *ARGYNNIS NEVADENSIS*, *Edwards, Trans. Amer. Ent. Soc.* 1870, p. 14; *Butt. N. Amer.* i. *Arg.* pl. 14 (1871). Tehama County, California, in July.

Labelled as "*A. macaria?* Edw.," a species unknown to me.

9. BRENTHIS EPITHORE.—*Argynnis* epithore, *Edwards, Proc. Ent. Soc. Phil.* ii. p. 504 (1864). Mendocino and Lake Counties in June.

10. MELITÆA PALLA, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 305. Mendocino and Lake Counties in June.

11. MELITÆA HOFFMANNI, *Behr, Proc. Cal. Acad. Nat. Sci.* iii. p. 89. n. 4 (1863). Mendocino County, May and June.

12. MELITÆA GABBII, *Behr, Proc. Cal. Acad. Nat. Sci.* iii. p. 89. n. 3 (1863). Mendocino County (one female).

13. MELITÆA STEROPE?, *W. H. Edwards, Trans. Am. Ent. Soc.* iii. p. 190 (1870). Mendocino and Colusa Counties.

I feel doubtful about this identification, for although the upper surface of these Californian examples agrees well with the description of Edwards's Oregon specimens, the under surface differs somewhat: the markings described by Edwards as white are in the Californian examples sulphur-yellow, and those described as orange are brick-red; the large crescents are also not 'marginal,' but submarginal, being followed by an undulated red border and white fringe; the discal and subbasal markings vary considerably.

We have received this species from a French dealer with the MS. name *M. aspasia*, Boisd.; it appears to me to be allied to what I regard as probably *M. Gabbii*.

The North-American species of *Melitæa* are about the most difficult of all the butterflies of that country to recognize from descriptions only, yet hardly any of them have been figured. In the nearly allied genus *Phyciodes*, on the other hand, even the melanistic and other sports produced by rearing under the most abnormal conditions have been largely illustrated.

14. MELITÆA LEANIRA, *Felder, Wien. ent. Mon.* iv. p. 106. n. 64 (1860); *Reise der Nov. Lep.* iii. pl. 50. figs. 13, 14 (1867). Siskiyou County, July to September.

15. MELITÆA HELVIA, *Scudder, Entom. Notes (Proc. Bost. Soc. Nat. Hist.* xii. 1868-69), p. 43. Mendocino County.

Improbable as it seems that this should be identical with the Alaska insect, it fits the description in every thing excepting in being rather more highly coloured, the "blackish fulvous" being replaced by black, and the "fulvous" by red. A somewhat faded example of Lord Walsingham's insect would therefore agree in

all respects with Scudder's description. The single example was labelled as *M. palla*, to which, however, it has no affinity.

16. MELITÆA CHALCEDONA, *Doubleday in Gen. Diurn. Lepid.* pl. 23. fig. 1 (1847). Shasta County, California.

Twelve examples of this common but striking species are in the collection.

17. PHYCIODES CAMILLUS, *W. H. Edwards, Trans. Am. Ent. Soc.* iii. p. 268 (1871). Shasta County.

A single example was obtained; it agrees well with the description of the Colorado insect, and also fairly well with one of the insects figured by Mr. Edwards as a melanistic variety of *P. morpheus* (fig. 4).

18. PHYCIODES PHAON.—*Melitæa phaon, Edwards, Proc. Ent. Soc. Phil.* ii. p. 505 (1864).

Var. PHYCIODES VESTA (part.), *Edwards, Butt. N. Am.* ii. *Phyciodes*, pl. —. figs. 20, 21 (1878). Mendocino and Shasta Counties.

Var. *P. VESTA* (typical).—*Melitæa vesta, Edwards, Trans. Am. Ent. Soc.* ii. p. 371 (1870). Mendocino County (one example).

This more nearly approaches figs. 18 & 19 of Edwards's plate.

19. VANESSA GRACILIS.—*Grapta gracilis, Grote & Robinson, Ann. Lyc. N. York*, viii. p. 432 (1867). Mendocino County.

20. VANESSA SATYRUS.—*Grapta satyrus, Edwards, Trans. Am. Ent. Soc.* ii. p. 374 (1869); *Butt. N. Amer.* ii. *Gr.* pl. 6. figs. 1-4 (1872). Mendocino County.

21. VANESSA HYLAS.—*Grapta hylas, Edwards, Trans. Am. Ent. Soc.* iv. p. 68 (1872); *Butt. N. Am.* ii. *Gr.* pl. 2. figs. 1-4 (1875). Mendocino County.

The three preceding species I found associated under the name of "*Grapta silenus*;" to my mind they appear to be perfectly distinct.

22. VANESSA MILBERTI, *Godart, Enc. Méth.* ix. p. 307. n. 25 (1819); *Boisd. & Leconte, Léop. Am. Sept.* p. 187, pl. 50. figs. 3, 4 (1833). Mendocino and Siskiyou Counties.

23. VANESSA CALIFORNICA, *Boisduval, Ann. Soc. Ent. France*, p. 366 (1852). The locality not stated; probably Mendocino County.

24. VANESSA ANTIOPA.—*Papilio antiopa*, *Linnæus, Fauna Suecica*, p. 277. n. 1056 (1761). Mendocino County.

25. PYRAMEIS CARDUI.—*Papilio cardui*, *Linnæus, Fauna Suecica*, p. 276. n. 1054 (1761). No exact locality noted.

26. PYRAMEIS VIRGINIENSIS.—*Papilio virginienensis*, *Drury, Ill. Exot. Ent.* i. pl. 5. fig. 1 (1773). No exact locality noted.

27. JUNONIA CÆNIA, *Hübner, Samml. exot. Schmett.* ii. (1816-24). Sonoma and Mendocino Counties; May and June.

28. LIMENITIS LORQUINI, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 301. Sonoma, Mendocino, Shasta, and Siskiyou Counties.

29. HETEROCHROA CALIFORNICA, *Butler, Proc. Zool. Soc.* 1865, p. 485. n. 6. Mendocino and Siskiyou Counties.

It is remarkable that most Lepidopterists will persist in labeling this species as *H. Bredowii* of Hübner: the latter is a perfectly distinct species, far more so, indeed, than many of the forms of *Heterochroa* universally regarded as distinct. It does not occur in N. America, the idea that it did having arisen from an inaccuracy in the identification of *H. californica*, which led Mr. Edwards to figure it under Hübner's name; this, however, was corrected by that author in his letterpress as soon as he had an opportunity of comparing the two species.

## ERYCINIDÆ.

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30. APODEMIA MORMO.—*Lemonias mormo*, *Felder, Wien. ent. Monatschr.* v. p. 101. n. 61 (1861).—*Apodemia mormo*, *Felder, Reise der Nov. Lep.* ii. p. 299. n. 400, pl. 37. figs. 1-4. Klamath River, California; in June.

## LYCÆNIDÆ.

31. LYCÆNA PARDALIS, *Behr, Proc. Calif. Acad.* iii. p. 279. n. 1 (1867). California.

32. LYCÆNA ACMON, *Westwood & Hewitson, Gen. Diurn. Lep.* pl. 76. fig. 2 (1852). Mendocino County.

*L. antægon* of Boisduval seems to be represented by the larger examples of this species; it is said to be a little larger than *L. ægon*.

33. *LYCÆNA ANNA*, *Edwards, Proc. Acad. Nat. Sci. Phil.* 1861, p. 163. A single female, obtained in Mendocino County.

34. *LYCÆNA PHERES*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 297. Siskiyou County (*Mr. Godman's collection*).

35. *CHRYSOPHANUS XANTHOIDES*.—*Polyommatus xanthoides*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 292. Sonoma County, in May.

36. *CHRYSOPHANUS GORGON*.—*Polyommatus gorgon*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 292. Mendocino County.

37. *CHRYSOPHANUS HELLOIDES*.—*Polyommatus helloides*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 292. Little Shasta.

38. *STRYMON SÆPIUM*.—*Thecla sœpium*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 287. ♂ ♀, Mendocino County.

By an oversight, Mr. Elwes labelled this as *T. acadica*, W. H. Edwards, which is a species nearer to *T. Edwardsii*.

39. *STRYMON TETRA*.—*Thecla tetra*, *W. H. Edwards, Trans. Am. Ent. Soc.* iii. p. 19 (1870). ♂, Siskiyou County.

If I have rightly identified this species, it is somewhat allied to *S. mopsus*.

40. *STRYMON HYPERICI*.—*Thecla hyperici*, *Boisduval & Leconte, Léop. Am. Sept.* p. 99, pl. 31. figs. 1-4 (1833). Shasta County.

Although nearly allied to *S. melinus*, I cannot regard this species as identical. We have seven examples of *S. melinus* agreeing exactly with Hübner's figure, whereas the Californian species differs markedly in the almost white colour of the under surface of the wings. Whether this species or *S. melinus* is the *Thecla humuli* of Harris, I do not know; if it be the latter, the name will sink into a synonym.

41. *STRYMON AURETORUM?*—*Thecla auretteorum*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 287. Rouge River, Oregon.

42. *STRYMON CALIFORNICA*.—*Thecla californica*, *W. H. Edwards, Proc. Acad. Nat. Sci. Phil.* xiv. p. 223 (1862). Sonoma and Siskiyou Counties.



43. STRYMON ERYPHON.—*Thecla eryphon*, Boisduval, *Ann. Soc. Ent. France*, 1852, p. 289. Mendocino County.

44. STRYMON DUMETORUM.—*Thecla dumetorum*, Boisduval, *Ann. Soc. Ent. France*, 1852, p. 291. Mendocino County.

Mr. Godman adds the two following species—*Thecla adenostomatis*, H. Edw., and *T. Henrici*, Grote, both of which appear to have been taken in Siskiyou County: the specimen of the latter species is unusually tawny in colour.

#### PAPILIONIDÆ.

45. COLIAS EURYTHEME, Boisduval, *Ann. Soc. Ent. France*, 1852, p. 286. Shasta and Siskiyou Counties.

46. COLIAS KEEWAYDIN, W. H. Edwards, *Butt. N. Amer.* i. Col. pl. 4 (1869). Siskiyou County.

Mr. Godman also forwards a pair of *Colias Edwardsii*, Behr, presented to him by Lord Walsingham; they are unusually large and well marked.

47. MEGONOSTOMA EURYDICE.—*Colias eurydice*, Desmarest, *Bull. Ent. Soc. France*, 1855, p. xxxii. ♂, Pit River.

I am quite willing to adopt the name *M. eurydice* rather than use that of *M. Wosnesenskii* for this beautiful insect; and therefore I follow Mr. Edwards in admitting the Report of the Secretary of the French Entomological Society upon Dr. Boisduval's exhibition. But this Report, which briefly characterizes the species, can in no way be fairly quoted as Boisduval's; in fact there is not a particle of evidence to show that the worthy Doctor did more than exhibit the specimens, and express his intention of describing them at a future time. It appears, however, that the Secretary, M. Desmarest, by the insertion of a brief comparative description in his report, was just in time to save the name proposed by M. Boisduval, though at the same time unintentionally depriving him of his species: had M. Boisduval placed a written description in the hands of the Secretary, he would have retained his authorship. It is a singular fact that M. Boisduval quotes the volumes for both 1854 and 1855, and p. lii instead of p. xxxii of the latter volume. In these errors he has been followed by both Edwards and Kirby.

48. SYNCHLOE OCCIDENTALIS.—*Pieris occidentalis*, Reakirt, *Proc. Ent. Soc. Phil.* vi. p. 133 (1866). Mendocino and Siskiyou Counties.

Mr. Edwards only quotes the 'Proceedings of the Academy of Natural Sciences' for the same year (1866); but on referring to it (p. 238), I find nothing beyond the name of the species and an imperfect reference to the then unpublished description above quoted.

49. SYNCHLOE VERNALIS.—*Pieris vernalis*, *Edwards, Proc. Ent. Soc. Phil.* ii. p. 501 (1864). Mendocino County.

Mr. Godman also possesses a small and rather dark-coloured female specimen. Is it *P. sisymbrii*? The North-American species appear to run very close.

50. SYNCHLOE VENOSA?—*Pieris venosa*, *Scudder, Proc. Bost. Nat. Hist. Soc.* viii. p. 182 (1861). One male, Mendocino County.

51. NEOPHASIA MENAPIA.—*Pieris menapia*, *Felder, Wien. ent. Monatschr.* iii. p. 271. n. 18 (1859); *Reise der Nov. Lep.* ii. p. 181. n. 172, pl. 25. fig. 7. Mendocino County and Mount Shasta.

52. EUCHLOE SARA.—*Anthocharis sara*, *Lucas, Rev. Zool.* 1852, p. 339; *W. H. Edwards, Butt. N. Amer.* i. *Anth.* pl. ii. figs. 1-5 (1871). Mendocino County, California.

53. EUCHLOE REAKIRTII.—*Anthocharis Reakirtii*, *Edwards, Trans. Am. Ent. Soc.* 1869, p. 368; *Butt. N. Amer.* i. *Anth.* pl. i. figs. 1-4 (1870). Mendocino County, California.

54. EUCHLOE LANCEOLATA.—*Anthocharis lanceolata*, *Lucas, Rev. Zool.* 1852, p. 338; *Strecker, Lep.* p. 49, pl. 6. figs. 6, 6a (1873). Mendocino County, California.

55. EUCHLOE HYANTIS.—*Anthocharis hyantis*, *W. H. Edwards, Trans. Am. Ent. Soc.* iii. p. 205 (1871). Mendocino County.

There can, I think, be no doubt that this is Edwards's species; but had I described the species, I should have said that the under surface of the secondaries was rather sap-green, blotched and spotted with silvery white, than simply "white, covered with confluent patches of yellow-green, powdered with grey;" the green portion of the wing prevails over the white. However, this is merely a matter of taste.

#### PAPILIONINÆ.

56. PARNASSIUS CLARIUS.—*Doritis clarius*, *Eversmann, Bull. Mosc.* 1843, p. 539, pl. 9. figs. 1 a-c. ♂ ♀, Mendocino and Siskiyou Counties.

Lord Walsingham obtained a long series of this species; and

with them I found seven examples evidently referable to the *P. clodius* of Ménétriés, as figured by Mr. Edwards in his magnificent work. Whether these examples really represent a distinct species, I leave those to decide who may have opportunities for breeding them: I am decidedly inclined to the belief that they do.

57. PARNASSIUS CLODIUS, *Ménétriés, Cat. Mus. Petrop. Lep.* i. p. 73. n. 109 (1855); *Edwards, Butt. N. Amer.* i. Parn. pl. i. figs. 5, 6 (1871). Sonoma, Mendocino, and Siskiyou Counties.

I detect the following marked differences between the two forms:—*P. clarius* ♂ has no red markings at base of secondaries below; the absence of such markings is noticeable both in Eversmann's and Edwards's figures; the female, however, has these markings well developed, and has all the bands beyond the cell of primaries above carried across these wings to inner margin. *P. clodius*, on the other hand, has the two sexes much alike in pattern, their upper surface being very similar to the male of *P. clarius*, and the under surface of secondaries showing red basal spots in both sexes. The range of *P. clodius* seems to be more extended than Mr. Edwards believed.

58. PAPILIO PHILENOR, *Linnæus, Mant. Plant.* p. 535 (1771); *Smith, Abbot, Lepid. Insects Georgia*, i. pl. 3 (1797). Mendocino and Lake Counties in June.

59. PAPILIO ZOLICAON, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 281. Mendocino County.

60. PAPILIO ALBANUS (= ? *P. eurymedon, Boisd.*), *Felder, Reise der Nov. Lep.* i. p. 93. n. 71 (1865). Mendocino County.

It seems likely that this is only a variety of the following.

60a. PAPILIO BUTULUS, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 279. Lake and Tehama Counties.

61. PAPILIO TUENUS, *Linnæus, Mant. Plant.* p. 536 (1771); *Boisd. & Leconte, Léop. Am. Sept.* p. 19, pls. 6, 7 (1833). Mendocino and Tehama Counties.

Mr. Godman also sends the following species:—

62. PAPILIO INDRA, *Reakirt, Proc. Ent. Soc. Phil.* vi. p. 123 (1866). Siskiyou County.

“A rare insect; differs from typical examples in the two yellow spots in the cell of the primaries being almost obsolete.”

## HESPERIDÆ.

63. GONIURUS TITYRUS.—*Papilio tityrus*, *Fabricius, Syst. Ent.* p. 532. n. 382 (1775); *Smith, Abbot, Lepid. Insects Georgia*, i. pl. 19 (1797). Mendocino County.

64. PAMPHILA NAPA.—*Hesperia napa*, *W. H. Edwards, Proc. Ent. Soc. Phil.* iv. p. 202, pl. i. figs. 3 & 4 (1865). One male, Shasta County, in July.

65. PAMPHILA SYLVANOIDES.—*Hesperia sylvanoides*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 313. Sonoma, Mendocino, and Siskiyou Counties.

The female described by Boisduval is probably an insect received under the name '*P. sylvanoides*' from a French dealer, and which is a male considerably larger than either *P. sylvanus* or *P. sylvanoides*.

66. PAMPHILA NEMORUM.—*Hesperia nemorum*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 314. Mendocino County.

67. PAMPHILA COLUMBIA, *Scudder, Fourth Rep. Peab. Acad. Sci.* for 1871, p. 77. n. 2 (1872). Shasta County.

This species has been confounded with our European *P. comma*, from which it is easily distinguishable.

68. PAMPHILA MELANE?—*Hesperia melane*, *Edwards, Trans. Am. Ent. Soc.* ii. p. 312. Mendocino County.

69. PYRGUS RURALIS.—*Syrictus ruralis*, *Boisduval, Ann. Soc. Ent. France*, 1852, p. 311. Mendocino County.

70. PYRGUS SYRICTUS.—*Pamphila syrichtus*, *Fabricius, Syst. Ent.* p. 534. n. 394 (1775). Sonoma and Shasta Counties.

71. THANAOS JUVENALIS.—*Hesperia juvenalis*, *Fabricius, Ent. Syst.* iii. 1, p. 339. n. 291 (1793). Sonoma and Mendocino Counties.

72. THANAOS ENNIUS.—*Nisoniades ennius*, *Scudder & Burgess, Proc. Bost. Nat. Hist. Soc.* xiii. p. 296, fig. 9 (1870). Sonoma and Mendocino Counties.

I strongly suspect the two preceding forms to be slight modifications of the same species: the fact that they are usually placed together in collections under the name of "*Nisoniades propertius*," Scudder (with which name the present series was labelled), shows how much Scudder's genital distinctions can be

depended upon as specific characters. I have named *T. ennius* by comparison with specimens separated in our collection by the author of the species when last in England.

73. *THANAOS TRISTIS*, *Boisduval, Ann. Soc. Ent. France*, 1852 p. 311. Mendocino County.

Mr. Godman adds the following species:—

74. *CARTEROCEPHALUS OMAHA*.—*Hesperia omaha*, *Edwards, Proc. Ent. Soc. Phil.* ii. p. 21 (1863). Siskiyou County.

“Very like our English species.”

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On Indications of the Sense of Smell in *Actiniæ*. By WALTER HERIES POLLOCK; with an Addendum by GEORGE J. ROMANES, LL.D., F.R.S., Sec. Linn. Soc.

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ABOUT two years ago, when I was staying on the west coast of Scotland, I spent a morning among the rock-pools left by a receding tide. Many of these pools were occupied by specimens of the common Sea-anemone lying in circles; and presently something in the behaviour of these creatures attracted my notice. This was that they appeared to become conscious of the presence of any kind of food (pieces of Mussel, Limpet, &c.) which I placed near them. If this was held near an individual Anemone the creature opened; if it was held in the centre of one of the circles the Anemones gradually opened in succession. Thinking that a burst of sunlight, coinciding with the offer of the bait, might have something to do with this, I repeated the process in pools shaded from the sun, with the same result. Pieces of stick or stone placed in the water (if placed, that is, so as to make a considerable disturbance) seemed to make some slight agitation, which, however, soon subsided; if placed so as to avoid any disturbance they had no visible effect.

I told my friend Mr. Romanes some time afterwards what I had observed. He, I believe, first verified my observations for himself, and then proposed that we should repeat the experiment together. This we did at the Aquarium of the London Zoological Gardens, and afterwards at the Crystal-Palace Aquarium. Mr. Romanes provided for the experiment some morsels of Cockle, which we attached to threads. Some of these morsels we sus-